AMENDMENTS TO THE SPECIFICATION

In the Application:

Please replace the Sequence Listing on file with replacement pages 1-92, attached hereto.

In the Specification:

Please amend the Specification as follows. Paragraph numbers correspond to the paragraph numbering set forth in published PCT application PCT/US03/24488.

Please replace paragraph [00013] beginning on page 5 with the following amended paragraph:

[00013] The allatostatins are an important group of insect neurohormones controlling diverse functions including the synthesis of juvenile hormones known to play a central role in metamorphosis and reproduction in various insect species. The very first Drosophila allatostatin, Ser-Arg-Pro-Tyr-Ser-Phe-Gly-Leu-NH2 (i. e., drostatin-3) (SEQ ID NO: 165), was isolated from Drosophila head extracts (Birgul et al. , EMBO J. , 1999,18, 5892-5900). Recently, a Drosophila allatostatin preprophormone gene has been cloned which encodes four Drosophila allatostatins: Val-Glu-Arg-Tyr-Ala-Phe-Gly-Leu-NH2 (drostatin-1) (SEQ ID NO: 163), Leu- Pro-Val-Tyr-Asn-Phe-Gly-Leu-NH2 (drostatin-2) (SEQ ID NO: 164), Ser-Arg-Pro- Tyr-Ser-Phe-Gly-Leu-NH2 (drostatin-3) (SEQ ID NO: 165), and Thr-Thr-Arg-Pro- Gln-Pro-Phe-Asn-Phe-Gly-Leu-NH2 (drostatin-4) (SEQ ID NO: 166) (Lenz et al., Biochem. Biophys. Res. Comm., 2000,273, 1126-1131). The first Drosophila allatostatin receptor was cloned by Birgul et al. and was shown to be functionally activated by drostatin-3 via Gi/Go pathways (Birgul et al. , EMBO J. 1999,18, 5892-5900). A second putative Drosophila allatostatin receptor (i. e., DARII) has been recently cloned (Lenz et al. , Biochem. Biophys. Res. Comm., 2000,273, 571- 577). The DARII receptor cDNA (Accession No. AF253526) codes for a protein that is strongly related to the first Drosophila allatostatin receptor. Recently, functional activation of DARII by allatostatins have been shown by us (Larsen, et al. , Biochem. Biophys. Res. Comm. , 2001,286, 895-901) and others (Lenz, et al., Biochem. Biophys. Res. Comm. , 2001, 286, 1117-1122). Recently, a Drosophila allatostatin type C preprophormone gene has been cloned which encodes a

Drosophila allatostatin type C preprophormone gene has been cloned which encodes a Drosophila allatostatin-C : Gln-Val-Arg-Tyr-Gln-Cys-Tyr-Phe-Asn-Pro-Ile-Ser- Cys-Phe-OH (SEQ ID NO: 73) (Williamson et al. , Biochem. Biophys. Res. Comm. , 2001,282, 124-130). The mature peptide should have a pGlu at the N-terminus, formed as a result of the N-terminal Gln cyclization, to yield: pGlu-Val-Arg-Tyr-Gln-Cys-Tyr-Phe- Asn-Pro-Ile-Ser-Cys-Phe-OH ~~(SEQ ID NO: 183)~~ (SEQ ID NO:88), and a disulfide bridge between Cys6 and Cysl3, similar to the Manduca sexta type C allatostatin, pGlu-Val-Arg- Phe-Gln-Cys-Tyr-Phe-Asn-Pro-Ile-Ser-Cys-Phe-OH ~~(SEQ ID NO: 182).~~ (SEQ ID NO:232), which differs only at position 4 (Phe4 vs Tyr4) (Kramer et al., Proc. Natl. Acad. Sci. USA, 1991,88, 9458-9462). Nichols at al., showed potent and prolonged inhibition of muscle contraction of the Drosophila allatostatin-C and named it a flatline (FLT) peptide (Nichols et al. Peptides, 2002,23, 787-794). To our knowledge, to date no receptors for insect allatostatin type-C have been identified.

Please replace paragraph [00014] beginning on page 6 with the following amended paragraph:

[00014] The sulfakinins are a family of insect Tyr-sulfated neuropeptides. They show sequence and functional (myotropic effects, stimulation of digestive enzyme release) similarity to the vertebrate peptides gastrin and cholecystokinin. A gene encoding two sulfakinins (also called drosulfal inins), DSKI [Phe-Asp-Asp- Tyr (S03H)-Gly-His-Met-Arg-Phe-amide] (SEQ ID NO: 160) and DSKII [Gly-Gly- Asp-Asp-Gln-Phe-Asp-Asp-Tyr (S03H)-Gly-His-Met-Arg-Phe-amide] (SEQ ID NO: 161), has been identified in Drosophila melanogaster (Nichols, Mol. Cell Neuroscience, 1992,3, 342-347; Nichols et al. , J. Biol. Chem., 1988, 263,12167- 12170). The C-terminal heptapeptide sequence, Asp-Tyr (S03H)-Gly-His-Met- Arg-Phe-amide (SEQ ID NO: 162), is identical in all sulfakinins identified so far from insects that are widely separated in evolutionary terms. The conservation of the heptapeptide sequence, including the presence of the sulfated Tyr residue, in widely divergent insect taxa presumably reflects functional significance of this myotropic"active core" (Nachman & Holman, in Insect Neuropeptides: Chemistry, Biology and Action, Menu, Kelly & Massler, Eds. , American Chemical Society, Washington, D.

C. , 1991, pp. 194-214). Recently, we identified the Drosophila orphan receptor (DmGPCR9) as a drosulfakinin receptor (named DSK-R1) and matched it with its activating peptide, a MetSOLeu modified drosulfakinin-1, Asp- Tyr (S03H)-Gly-His-Leu-Arg-Phe-amide ~~(SEQ ID NO: 157)~~ (SEQ ID NO:230) (Kubiak et al., Biochem. Biophys. Res. Comm. , 2002,291, 313-320). The new de-orphaned Drosophila GPCRs include recptors for PRXamide peptides, CCAP, corazonin, and AKH (Park et al., Proc. Natl. Acad. Sci. USA, 2002,99, 11423-11428; Cazzamali et al., Biochem. Biophys. Res. Comm., 2002,298, 31-36); leukokinin (Radford et. al. , J. Biol. Chem. 2002,277, 38810-38817) ; Drostatin-C (Kreienkamp et al. , J. Biol. Chem, 10.1074/jbc. M206931200 (published online 6 August 2002)) ; FMRFamide (Cazzamali et al. Proc. Natl. Acad. Sci. USA, 2002, 99,12073-12078) ; and neuoropeptide F (Mertens, et al., Biochem. Biophys. Res. Comm. , 2002,297, 1140-1148).

Please replace paragraph [000244] beginning on page 79, with the following amended paragraph:

[000244]

Table 6. DNA Sequencing Primers

DmG PCR	5′ Primer	3′ Primer	Internal Primers	
			Sense	Antisense
1	VGS28-gtagcc gccATGGCCAAC TTAAGCTGGCTG AGCAC ~~(SEQ ID NO:184)~~ (SEQ ID NO:228)	VGS29-gtaTCA GTTGATTCGCCT CCCCAGCTCT ~~(SEQ ID NO:185)~~ (SEQ ID NO:229)	VGS49-TGCAGC ATCTACATATCC ACGCTGA ~~(SEQ ID NO:186)~~ (SEQ ID NO:130)	VGS50-GATTGGCGA CACGGCACCCGTGCC A ~~(SEQ ID NO:187)~~ (SEQ ID NO:168)
2	VGS30-gtagcc gccATGTCACTA CCCAGCTGGCTA ACAGA (SEQ ID NO:188)	VGS31gtaTTAC CGCGGCATCAGC TTGGTGACC (SEQ ID NO:190)	VGS59-GTACGG CGTGCTAATCGT CTTCGGC (SEQ ID NO:191)	VGS60-ATTGCGAGC AGTGCGCATGATGGG C (SEQ ID NO:192)

	DEL1937-gccgccATGAATCAGACGGAGCCCGCCCAGC (SEQ ID NO:189)			
3	DEL1840-gccgccATGTCGGAGATTGTCGACACCGAGC (SEQ ID NO: 193)	DEL1860-TTCCAGTGGCAGGACAGATCGGGAT (SEQ ID NO:194)	VGS65-ATGTGGCCAGATGGACGATATCCCA (SEQ ID NO:195)	VGS66-CAATCATGGGAATGCCCGTAGTCAG (SEQ ID NO:196)
4	DEL1933-gccgccATGGAGAACACCACAATGCTGGCTA (SEQ ID NO:197)	DEL1934-TTAGAGTCCAGTGGTGGAGGTCCTG (SEQ ID NO:198)	VGS47-GCCATCATCCGGCCACTGCAGCCGC (SEQ ID NO: 199)	VGS48-AATGGGATTGTACATGGAGTTGCTC (SEQ ID NO: 200)
5	DEL1844-gccgccATGGAGAATCGCAGTGACTTCGAGGC (SEQ ID NO:201)	DEL1845-tctagaTCAGGAGAGCAGTTGGGTGGTGTTGGC (SEQ ID NO:202)	DEL1891-ATCTCCATCGACAGATACGT (SEQ ID NO:203)	DEL1892-GCCGCGATGGCCAGGTTGCA (SEQ ID NO:204)
6	DEL1842-gccgccATGTACTACATAGCTCACCAGCAGCCG (SEQ ID NO:205) DEL1990-gccgccATGGAGCACCACAATAGCCATCTGTT (SEQ ID NO:206)	DEL1862-CGATCGGCGCACCGGAGAATCAGTT (SEQ ID NO:207) DEL1989-TCAAAACTCGGTGCTTCTTATGTTTG (SEQ ID NO:208)	VGS51-GTCACCAATTACTTTATAGCCAGCT (SEQ ID NO:209)	VGS52-GGGCAGCCAACAGCAGGTGAACACA (SEQ ID NO:210) DEL1991-GTGAGATGACTACGAAGTACCATC (SEQ ID NO:211)
7	VGS69-gtagccgccATGGCAATGGACTTAATCGAGCA (SEQ ID NO:212)	VGS70-TTAAAGTGGTTGCCACAAGGACT (SEQ ID NO:213)	VGS74-GGGCACACGTGCTCCTGGTAACG (SEQ ID NO:214)	VGS73-ATAGAGCTGCAGTGGCAGCCAGC (SEQ ID NO:215)
8	VGS38-gtagccgccATGTTTACGTGGCTGATGATGGATGT (SEQ ID NO: 216)	VGS39-gtaATTACAAATCTGTCTGCTGCACTGCG (SEQ ID NO:217)	VGS55-GTGCAAAGCCTACATGGTGAGCACA (SEQ ID NO:218)	VGS56-TGAGTATTTCCAGTCGGGAGAGGTC (SEQ ID NO:219)

9	VGS40-gtagccgccATGTTCAACTACGAGGAGGGGGATGC (SEQ ID NO:220)	VGS41-gtaTTAGAGCTGAGGACTGTTGACGGCG (SEQ ID NO:221)	VGS53-GTGCTCTGCATGCCCGTCACCCTGG (SEQ ID NO:222)	VGS54-GACGAACAGCATCTTGACCACACGC (SEQ ID NO:223)
11	DEL1905-gccgccATGGCTGGCCATCAGTCGCTGGCAC (SEQ ID NO:224)	DEL1906-TTAGAGCATTTCAATATTGGACGTT (SEQ ID NO:225)	VGS57-CCCGTGACTAGCATGTCCCTGCGAA (SEQ ID NO:226)	VGS58-ACCGGAATCGCAGTCGTCACAATCG (SEQ ID NO:227)

Please replace paragraph [000376] beginning on page 110 with the following amended paragraph:

[000376] A table matching the ligands with their associated receptors is shown below in Table 7.

Table 7

GPCR	SEQ ID NO	Peptide Matching Sequence
dmgpcr1	SEQ ID NO:186	AQRSPSLRLRF-NH_2
	SEQ ID NO:187	PIRSPSLRLRF-NH_2
	SEQ ID NO:25	TDVDHVFLRF-NH_2
	SEQ ID NO:26	DPKQDFMRF-NH_2
	SEQ ID NO:27	PDNFMRF-NH_2
	SEQ ID NO:28	TPAEDFMRF-NH_2
	SEQ ID NO:29	SLKQDFMHF-NH_2
	SEQ ID NO:30	SVKQDFMHF-NH_2
	SEQ ID NO:31	AAMDRY-NH_2
	SEQ ID NO:32	SVQDNFMHF-NH_2

	SEQ ID NO:33	ARGPQLRLRF-NH_2
dmgpcr4	SEQ ID NO:34	GDGRLYAFGL-NH_2
	SEQ ID NO:35	DRLYSFGL-NH_2
	SEQ ID NO:36	APSGAQRLYGFGL-NH_2
	SEQ ID NO:37	GGSLYSFGL-NH_2
dmgpcr6 (6a)	SEQ ID NO:38	FIRF-NH_2
	SEQ ID NO:39	KNEFIRF-NH_2
	SEQ ID NO:40	FMRF-NH_2
	SEQ ID NO:41	KSAFMRF-NH_2
	SEQ ID NO:42	KPNFLRF-NH_2
	SEQ ID NO:43	FLRF-NH_2
	SEQ ID NO:44	YLRF-NH_2
	SEQ ID NO:45	KPNFLRY-NH_2
	SEQ ID NO:46	TNRNFLRF-NH_2
	SEQ ID NO:47	RNKFEFIRF-NH_2
	SEQ ID NO:48	AGPRFIRF-NH_2
	SEQ ID NO:49	GLGPRPLRF-NH_2
	SEQ ID NO:50	IL-Nle-RF-NH_2
	SEQ ID NO:51	AGAKFIRF-NH_2
	SEQ ID NO:52	APKPKFIRF-NH_2
	SEQ ID NO:53	KSAFVLRF-NH_2

	SEQ ID NO:54	TKFQDFLRF-NH_2
	SEQ ID NO:55	SAEPFGTMRF-NH_2
	SEQ ID NO:56	ASEDALFGTMRF-NH_2
	SEQ ID NO:57	SADDSAPFGTMRF-NH_2
	SEQ ID NO:58	EDGNAPFGTMRF-NH_2
	SEQ ID NO:59	FLFQPQRF-NH_2
dmgpcr66aL and 6bL	SEQ ID NO:60	SADPNFLRF-NH_2
	SEQ ID NO:61	SQPNFLRF-NH_2
	SEQ ID NO:62	ASGDPNFLRF-NH_2
	SEQ ID NO:63	SDPNFLRF-NH_2
	SEQ ID NO:64	AAADPNFLRF-NH_2
	SEQ ID NO:65	PNFLRF-NH_2
	SEQ ID NO:66	KPNFLRF-NH_2
	SEQ ID NO:67	AGSDPNFLRF-NH_2
	SEQ ID NO:68	KPNFLRY-NH_2
	SEQ ID NO:69	SPREPIRF-NH_2
	SEQ ID NO:70	LRGEPIRF-NH_2
	SEQ ID NO:71	SPLGTMRF-NH_2
	SEQ ID NO:72	EAEEPLGTMRF-NH_2
	SEQ ID NO:73	ASEDALFGTMRF-NH_2
	SEQ ID NO:74	EDGNAPFGTMRF-NH_2

	SEQ ID NO:75	SAEPFGTMRF-NH_2
	SEQ ID NO:76	SADDSAPFGTMRF-NH_2
	SEQ ID NO:77	KPTFIRF-NH_2
	SEQ ID NO:78	ASPSFIRF-NH_2
	SEQ ID NO:79	GAKFIRF-NH_2
	SEQ ID NO:80	AGAKFIRF-NH_2
	SEQ ID NO:81	APKPKFIRF-NH_2
	SEQ ID NO:82	KSAYMRF-NH_2
	SEQ ID NO:83	SPMQRSSMVRF-NH_2
	SEQ ID NO:84	SPMERSAMVRF-NH_2
	SEQ ID NO:85	SPMDRSKMVRF-NH_2
	SEQ ID NO:86	KNEFIRF-NH_2
	SEQ ID NO:87	KPSFVRF-NH_2
	SEQ ID NO:88	pQPKARSGYIRF-NH_2
	SEQ ID NO:89	AMRNALVRF-NH_2
	SEQ ID NO:90	ASGGMRNALVRF-NH_2
	SEQ ID NO:91	NGAPQPFVRF-NH_2
	SEQ ID NO:92	RNKFEFIRF-NH_2
	SEQ ID NO:93	SDRPTRAMDSPLIRF-NH_2
	SEQ ID NO:94	AADGAPLIRF-NH_2
	SEQ ID NO:95	APEASPFIRF-NH_2

	SEQ ID NO:96	ASPSAPLIRF-NH_2
	SEQ ID NO:97	SPSAVPLIRF-NH_2
	SEQ ID NO:98	ASSAPLIRF-NH_2
	SEQ ID NO:99	KHEYLRF-NH_2
	SEQ ID NO:100	SLLDYRF-NH_2
	SEQ ID NO:101	EIVFHQISPIFFRF-NH_2
	SEQ ID NO:102	GGPQGPLRF-NH_2
	SEQ ID NO:103	GPSGPLRF-NH_2
	SEQ ID NO:104	AQTFVRF-NH_2
	SEQ ID NO:105	GQTFVRF-NH_2
	SEQ ID NO:106	KSAFVRF-NH_2
	SEQ ID NO:107	KSQYIRF-NH_2
	SEQ ID NO:108	DVPGVLRF-NH_2
	SEQ ID NO:109	KSVPGVLRF-NH_2
	SEQ ID NO:110	SEVPGVLRF-NH_2
	SEQ ID NO:111	SVPGVLRF-NH_2
	SEQ ID NO:112	DFDGAMPGVLRF-NH_2
	SEQ ID NO:113	EIPGVLRF-NH_2
	SEQ ID NO:114	WANQVRF-NH_2
	SEQ ID NO:115	ASWASSVRF-NH_2
	SEQ ID NO:116	AMMRF-NH_2

	SEQ ID NO:117	GLGPRPLRF-NH_2
	SEQ ID NO:118	SPSAKWMRF-NH_2
	SEQ ID NO:119	TKFQDFLRF-NH_2
	SEQ ID NO:120	pQDRDYRPLQF-NH_2
	SEQ ID NO:121	FIRF-NH_2
	SEQ ID NO:122	AVPGVLRF-NH_2
	SEQ ID NO:123	GDVPGVLRF-NH_2
	SEQ ID NO:124	SDIGISEPNFLRF-NH_2
	SEQ ID NO:125	SGKPTFIRF-NH_2
	SEQ ID NO:126	AEGLSSPLIRF-NH_2
	SEQ ID NO:127	FDRDFMRF-NH_2
	SEQ ID NO:128	AGPRFIRF-NH_2
	SEQ ID NO:129	GMPGVLRF-NH_2
	SEQ ID NO:130	IL-Nle-RF-NH_2
	SEQ ID NO:131	LQPNFLRF-NH_2
	SEQ ID NO:132	KPNFIRF-NH_2
	SEQ ID NO:133	FMRF-NH_2
	SEQ ID NO:134	FLRF-NH_2
	SEQ ID NO:135	YIRF-NH_2
	SEQ ID NO:136	GNSFLRF-NH_2
	SEQ ID NO:137	DPSFLRF-NH_2

	SEQ ID NO:138	pQDFMRF-NH_2
	SEQ ID NO:139	KPNQDFMRF-NH_2
	SEQ ID NO:140	TDVDHVFLRF-NH_2
	SEQ ID NO:141	AAMDRY-NH_2
	SEQ ID NO:142	SPKQDFMRF-NH_2
	SEQ ID NO:143	PDNFMRF-NH_2
	SEQ ID NO:144	DPKQDFMRF-NH_2
	SEQ ID NO:145	TPAEDFMRF-NH_2
	SEQ ID NO:146	SDNFMRF-NH_2
	SEQ ID NO:147	YLRF-NH_2
	SEQ ID NO:148	SDRNFLRF-NH_2
	SEQ ID NO:149	TNRNFLRF-NH_2
	SEQ ID NO:150	PDVDHVFLRF-NH_2
	SEQ ID NO:151	pQDVDHVFLRF-NH_2
	SEQ ID NO:152	FLFQPQRF-NH_2
	SEQ ID NO:153	ARGPQLRLRF-NH_2
	SEQ ID NO:154	FDDY(SO_3H)GHLRF-NH_2
	SEQ ID NO:155	FDDYGHLRF-NH_2
	SEQ ID NO:156	MDSNFIRF-NH_2
dmgpcr9	SEQ ID NO:157	FDDY(SO_3H)GHLRF-NH_2
dmgpcr5	SEQ ID NO:169	APTSSFIGMR-NH_2

	SEQ ID NO:170	APLAFYGMR-NH_2
	SEQ ID NO:171	APLAFYGLR-NH_2
	SEQ ID NO:172	APTGFTGMR-NH_2
	SEQ ID NO:173	APVNSFVGMR-NH_2
	SEQ ID NO:174	APNGFLGMR-NH_2
dmgpcr7	SEQ ID NO:175	DPAFNSWG-NH_2
	SEQ ID NO:176	GSGFSSWG-NH_2
	SEQ ID NO:177	pGlu-SSFHSWG-NH_2
	~~SEQ ID NO:178~~ **SEQ ID NO:231**	GASFYSWG-NH_2
	SEQ ID NO:179	NPFHSWG-NH_2
	SEQ ID NO: 180	PSFHSWS-NH_2
	SEQ ID NO: 181	NSVVLGKKQRFHSWG-NH_2
	SEQ ID NO:182	pGlu-RFHSWG-NH_2
	SEQ ID NO: 183	QRFHSWG-NH_2
dmgpcr8	SEQ ID NO:184	pGlu-VRFRQCYFNPISCF-OH
	SEQ ID NO:185	pGlu-VRYRQCYFNPISCF-OH